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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/887,320	06/25/2001	Mutsuo Nakashima	KOJIM-245 D1	6821

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EXAMINER

HAMILTON, CYNTHIA

ART UNIT	PAPER NUMBER
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1752

DATE MAILED: 04/09/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/887,320

Applicant(s)

NAKASHIMA ET AL.

Examiner

Cynthia Hamilton

Art Unit

1752

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 June 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-5 and 16-21 is/are pending in the application.
- 4a) Of the above claim(s) none is/are withdrawn from consideration.
- 5) ☒ Claim(s) 2-4 is/are allowed.
- 6) ☒ Claim(s) 5 and 16-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 09/129,950.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

Art Unit: 1752

DETAILED ACTION

1. Claims 1 and 6-15 have been cancelled. Claims 2-4 remain from the parent application and claims 16-21 have been added.

2. Applicants have made allegations about the claims now present with respect to the Restriction in Parent Application 09-129950 and Paper No. 4 mailed October 4, 1999. The examiner responds:

Applicant's remarks	Examiner's response
claims 2-3 from Group II in parent application drawn to "a silicone compound with acid labile groups" and claims 4-5 from Group III and drawn to "a cross-linked silicone compound with acid labile groups" is a subset of claims allowed in parent application as evidenced by (1) some of allowed claims in the parent being drawn to resist compositions which comprise compound having acid labile groups (compare eg composition claim 7 and the claims which depend from it), (2) other allowed claims in the parent are drawn to resist compositions which comprise compounds that are crosslinked (compare e.g. composition 8 (which corresponds directly to instant compound claim 4) and claim 14).	The compounds of claims 2-5 are not subsets of the compositions of the allowed claims of Patent 6,309,796 B1 (Patent of Parent application). The compositions of the allowed claims are subsets of the compound claims. No search was made for unclaimed compounds in the parent application. The search for the compositions in the parent application only encompassed composition classes. A subset to be a subset must be wholly within the set it is a subset of. The compounds can be used in compositions outside the set in the patent resist claims. Thus, claims 2-5 are not subsets of any of the allowed claims. It is the compound claim that is much broader than the composition claim and not the reverse.
Because claims 2-5 are compound found in the allowed compositions of the parent application then the compounds are patentable.	Thus, allowance of the resist compositions which are a combination of which the instant compounds are a subcombination thereof does not make the subcombination allowable, on it's face. The logic here is not sound. As a battery in a flash light is not a subset of the flash light but instead only a subcombination useful in many other combinations, so is the instant compound like the battery and the patent resist claims like the flashlight.
Applicants argue claims 2-3 should not be restricted from claims 4-5 as they were in the parent application because all the subsets of	The examiner has already answered this argument above.

Art Unit: 1752

resist compositions were allowed in the parent application	
claims 2-3 (group II) and claims 4-5 (group III) recite overlapping subject matter which is the compounds of Group II comprise acid labile groups as do the compounds of Group III.	The subject matter of Groups II and III overlap at one point only and that is where 0 mol% of the hydrogen atoms of the carboxyl groups and/or hydroxyl groups are replaced by crosslinking groups. The compounds of claims 2-3 clearly do not contain crosslinking groups as set forth in claims 4-5. What the compounds of Group II are, is an reactive intermediate of the compounds of Group III that have crosslinking groups. Group III compounds are made from Group II compounds except for the one overlap point. Because both groups have acid labile groups only makes them a subset of an unclaimed group of compounds, i.e. all compounds with acid cleavable groups.
A search of group II is required for Group III	The examiner agrees with respect to the one point they have in common, thus she does not restrict claims 2-3 from 4-5 for this reason alone.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 18-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 18-21 recite the limitation "The resist composition of claim 4 further comprising" in line 1. There is insufficient antecedent basis for this limitation in the claim.

Art Unit: 1752

There is no composition in claim 4. There is no resist in claim 4. There is not resist composition in claim 4. Claim 4 is drawn to a high molecular weight silicone compound. Thus, what is really claimed here is unclear. The examiner is required to examine claims 18-21 anyway. She has done so taking each added component as a composition with the silicone compound of claim 4. This is the broadest reasonable interpretation of these claims as presented. The examiner notes for the record such resist compositions have no photoacid generator present in their most comprehensive form. At best, the photoacid generator is a tacit optional component. The examiner believes applicants may have intended to make claims 18-21 dependent upon claims 16 or 17, but she has no evidence to support this supposition.

6. The examiner notes for the record that the resist compositions of the parent application were never restricted from each other. All resist compositions wherein a photoacid generator was present were kept together. Thus, newly presented claims 16-17 would have not have been restricted from the claims allowed in the parent application. Thus, issues of obvious double patenting are now addressed because of this.

7. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Art Unit: 1752

8. Claim 16 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 15 of U.S. Patent No. 6,309,796 b1. Although the conflicting claims are not identical, they are not patentably distinct from each other because instant claim 16 varies from patent claim 15 only in instant claim 2 wherein the silicone compound is defined differently only at R² at "or alkenyl group having 3 to 8 carbon atoms" wherein the patent claim 16 has 1-8 carbon atoms at this point and in definition of R' wherein the patent claim has cyclic alkylene group and the instant claim 2 has "cyclic alkenylene group". The examiner notes that looking at the position of R' the use of alkenyl is a misnomer because it references monovalent groups and that alkenylene is the proper name for a divalent ethylenically unsaturated carbon group as set forth in the attached Class 532 definitions on page 532-5 and 532-6 with regard to acyclic unsaturated carbon groups. This difference from alkenyl to alkenylene is seen as a correction in language that is clear to workers of ordinary skill in the art when they see the structure in which R' is present. Thus, the instant resist of claim 16 differs from the patent resist of claim 15 only in that when R² is present as an alkenyl group it is limited to 3-8 carbon atoms which is narrower than the 1-8 carbons in the patent resist. The examiner notes that an alkenyl group must have at least 2 carbons in it to be an alkenyl group. Thus, the difference between the patent claim and the instant claim is really 2-8 carbons versus 3-8 carbons. Compounds which are homologs (compounds differing regularly by the successive addition of the same chemical group, e.g., by -CH₂- groups) are generally of sufficiently close structural similarity that there is a presumed expectation that such compounds possess similar properties. In re Wilder, 563 F.2d 457, 195 USPQ 426 (CCPA 1977). See also In re May, 574 F.2d 1082, 197 USPQ 601 (CCPA 1978) (stereoisomers prima facie obvious). Thus, the

Art Unit: 1752

elimination of one carbon from the range of an alkenyl group in instant claim 16 is held prima facie obvious in view of the homologous nature of C2 and C3 alkenyl groups. There is a difference in scope between the patent claimed invention and the instant claimed invention so there is no issue of claiming the exact same resist composition in both places.

9. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

10. Claims 18-21 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Considering the resist compositions of claims 18-21 to contain as essential components only the compounds of claim 4 and the added materials of each claim 18-21, then there is no original support for these generic compositions. In the paragraph starting on line 15 of page 4 from the instant specification is found the following:

We have found that a high molecular weight silicone compound (often simply referred to as silicone polymer) comprising recurring units of the general formula (1) shown below and having a weight average molecular weight of 1,000 to 50,000, or a high molecular weight silicone compound in which some or all of the hydrogen atoms of carboxyl groups or carboxyl groups and hydroxyl groups in the silicone compound of formula (1) are replaced by acid labile groups of at least one type, as well as a positive resist composition comprising the silicone polymer and a photoacid generator added thereto, or a negative resist composition comprising the silicone polymer, a photoacid generator and a compound crosslinkable under the action of acid, especially resist compositions further comprising a dissolution inhibitor in addition to the photoacid generator, and the resist compositions further comprising a basic compound are effective for increasing the dissolution contrast of resist and especially a dissolution rate after exposure; that the resist compositions further comprising a compound having a group represented by $\equiv \text{C}-\text{COOH}$ in

Art Unit: 1752

a molecule is effective for improving the PED stability of resist and the edge roughness on nitride film substrates; and that the composition is further improved in ease of coating and storage stability by further blending an acetylene alcohol derivative. Therefore, silicone base resist compositions according to the invention have high transparency, high resolution, improved latitude of exposure, process adaptability, and practical applicability, and are very useful as ultra-LSI resist materials advantageous for precise micro-processing. The present invention is predicated on these findings.

Thus, the presence of the photoacid generator is disclosed always whenever a dissolution inhibitor, basic compound, compound having a group represented by $\equiv\text{C--COOH}$ in a molecule or an acetylene alcohol derivative is added to a resist composition in the original disclosure.

This is also seen in the original claims of the parent application.

11. Claims 5 and 17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 5, last line reference is made to a c'', but no c'' is found in the formulas in claim 5 which needs definition. Thus, there is no clear antecedent basis for c''. The examiner believes if there were apostrophes in the structure as drawn they were obliterated by the bond line above c. The examiner has examined this claim as if the c is c'' in claim 5. She suggests using a different symbol or adjusting the location of the apostrophes so that they are visible. The examiner notes at this time that the c' in claim 4 is visible but barely.

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Watanabe et al (6,312,869 B1) teach using vinyl resins that have been crosslinked and have acid cleavable groups used in positive resists. Takemura et al (6,066,433) teach silicone polymers and photoresists wherein crosslinking is through phenol groups and have acid labile groups attached via the phenol groups. Kaneko et al (5,972,560) has been carefully

Art Unit: 1752

reviewed for possible double patenting issues. None were found. Kaneko et al had no requirement that a separate unit had the acid cleavable unit.

13. Claims 2-4 are allowed.

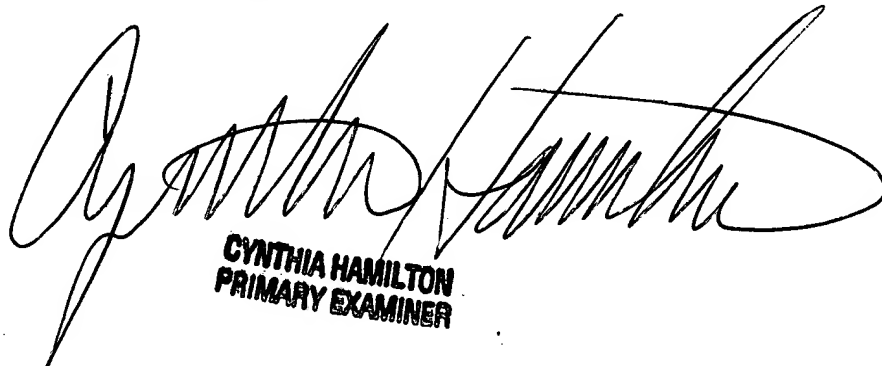
14. Claims 5 and 17 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Primary Examiner Cynthia Hamilton whose telephone number is (703) 308-3626. The examiner can normally be reached on Monday-Friday, 9:30 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Janet Baxter can be reached on (703) 308-2303. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application should be directed to the 1700 receptionist whose telephone number is (703) 308-0661.

Cynthia Hamilton
April 5, 2003



**CYNTHIA HAMILTON
PRIMARY EXAMINER**